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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/577,695

04/28/2006

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LU 6141 (US)

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03/06/2009

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EXAMINER

CHEUNG, WILLIAM K

ART UNIT

PAPER NUMBER

1796

MAIL DATE

DELIVERY MODE

03/06/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/577,695	Applicant(s) GONIOUKH ET AL.	
	Examiner WILLIAM K. CHEUNG	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>092506</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. In view of the preliminary amendment of April 28, 2006, claims 1-9 have been cancelled, and new claims 10-21 have been added. Claims 10-21 are pending.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 10-21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

10. (New) A process for continuously preparing an ethylene homopolymer or copolymer in presence of at least one free-radical polymerization initiator and, optionally, at least one molecular weight regulator at from 120°C to 350°C and a pressure from 100 to 4000 bar, wherein the ethylene homopolymer or copolymer is separated from unpolymerized ethylene and optionally from comonomers in a high-pressure stage at a pressure from 100 to 500 bar and at least one low-pressure stage at a pressure from 1 to 100 bar, the unpolymerized ethylene separated off in the high-pressure stage is separated from any remaining monomeric, oligomeric and/or polymeric constituents and is re-circulated to a first inlet of a first tube reactor in a high-pressure circuit, and the unpolymerized ethylene separated off in the low-pressure stage is separated from any remaining monomeric, oligomeric and/or polymeric constituents and is re-circulated to a second inlet of a second tube reactor in a low-pressure circuit, wherein the free-radical polymerization initiator is used as a solution in an isoparaffinic solvent, the isoparaffinic solvent comprising a boiling point equal to or less than 160°C, and the isoparaffinic solvent is separated from the monomeric, oligomeric and/or polymeric constituents in the low-pressure circuit, and the isoparaffinic solvent is reused for dissolving the free-radical polymerization initiator.

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20. (New) An apparatus for polymerizing ethylene at high-pressure and, optionally, comonomers comprising:

- a) at least one high-pressure tube reactor comprising an inlet and at least one feed point for a monomer and at least one feed point for a solution of polymerization initiators;
- b) at least one mixing vessel for dissolving the polymerization initiators in an isoparaffinic solvent comprising a boiling point equal to or less than 160°C, connected to at least one of the feed points;
- c) at least one high-pressure stage and at least one low-pressure stage for separating unpolymerized reaction constituents;
- d) at least one high-pressure circuit for re-circulating the monomer separated off in the high-pressure stage to the inlet of the high-pressure tube reactor;
- e) at least one low-pressure circuit for re-circulating monomer separated off in the low-pressure stage, the low-pressure circuit comprising at least one first separator for separating other reaction constituents from the monomer and solvent, and at least one last separator for separating the solvent from the monomer, with at least one heat exchanger; and
- f) a return line for re-circulating the solvent from the last separator to the mixing vessel.

Applicants' specification is silent on any teachings on how "re-circulate" is achieved in the claimed invention. According to the following Wand Factors Analysis, the examiner has a reasonable basis to believe that the claimed invention is not enabled for one of ordinary skill in art to make/use of the claimed process for preparing ethylene homopolymer or copolymer.

(A)	The breadth of the claims.	The breadth of the claims broadly encompasses a process for continuously preparing an ethylene homopolymer or copolymer using two tube reactors.
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(B)	The nature of the invention.	The nature of the invention relates to a polymerization process for ethylene homopolymer or copolymer.
(C)	The state of the prior art.	The state of the prior art involves the preparation of ethylene homopolymer or copolymer using two tube reactor.
(D)	The level of one of ordinary skill.	One of ordinary skill would be able to understand and appreciate the basic capability of tube reactors. Since unlike loop reactors, tube reactors do not possess a return loop to enable the claimed "recirculated" feature as claimed.
(E)	The level of predictability in the art.	Since tube reactors do not inherently possess a return loop for recirculating, it would not be predictable for one of ordinary skill in art to recognize that that the a tube reactor, which is not a loop reactor, is capable of recirculating monomer.
(F)	The amount of direction provided by the inventor.	Throughout the entire specification, applicants fail to provide any direction on how to recirculate the monomer or reaction content.
(G)	The existence of working examples.	Applicants' specification fails to include any working examples to show how to recirculate the monomer or reaction content.
(H)	The quantity of experimentation needed to make or use the invention based on the content of the disclosure.	Although experimentation is not needed, the specification fail to provide any instruction of sources or apparatus that can be used for enabling the claimed "recirculating" feature.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 20-21 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Marechal (US 6,355,741).

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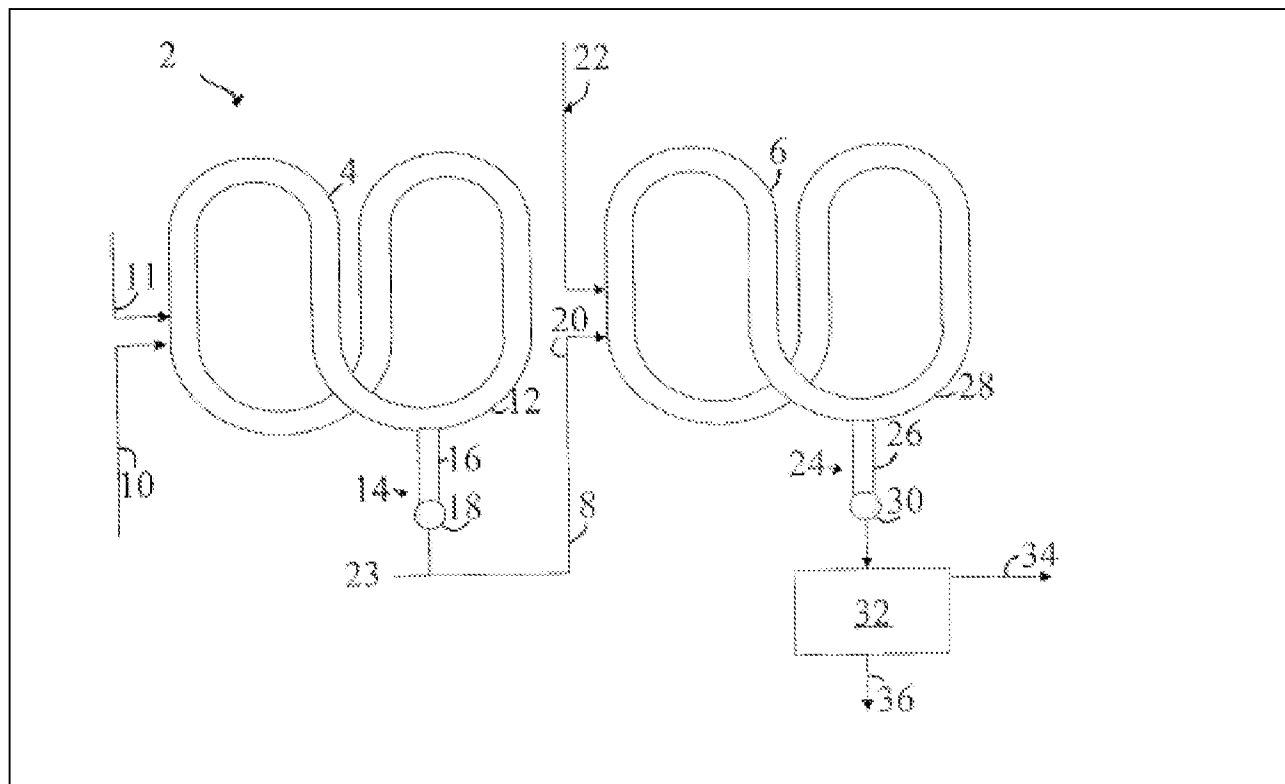
20. (New) An apparatus for polymerizing ethylene at high-pressure and, optionally, comonomers comprising:

- a) at least one high-pressure tube reactor comprising an inlet and at least one feed point for a monomer and at least one feed point for a solution of polymerization initiators;
- b) at least one mixing vessel for dissolving the polymerization initiators in an isoparaffinic solvent comprising a boiling point equal to or less than 160°C, connected to at least one of the feed points;
- c) at least one high-pressure stage and at least one low-pressure stage for separating unpolymerized reaction constituents;
- d) at least one high-pressure circuit for re-circulating the monomer separated off in the high-pressure stage to the inlet of the high-pressure tube reactor;
- e) at least one low-pressure circuit for re-circulating monomer separated off in the low-pressure stage, the low-pressure circuit comprising at least one first separator for separating other reaction constituents from the monomer and solvent, and at least one last separator for separating the solvent from the monomer, with at least one heat exchanger; and
- f) a return line for re-circulating the solvent from the last separator to the mixing vessel.

Marechal (Figure) disclose two tube (loop) reactors that are connected in a series. Further, Marechal (col. 6, line 45 to col. 7, line 30) clearly indicate that the tube reactors can handle the polymerization of ethylene under elevated temperatures and pressures. Marechal (figure) clearly also indicate that the disclosed apparatus can recirculate its content. Marechal (figure, item 34) clearly teach the return line as claimed. Although the polymerization process of Marechal is different as compared to the polymerization process as claimed, however, the apparatus as disclosed in Marechal is clearly capable of being used to perform the polymerization process as

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claimed. Therefore, the examiner has a reasonable basis that the apparatus invention of claims 20-21 have been met by Marechal. Since the PTO does not have proper means to conduct experiments, the burden of proof is now shifted to applicants to show otherwise. In re Best, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977); In re Fitzgerald, 205 USPQ 594 (CCPA 1980).



Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to WILLIAM K. CHEUNG whose telephone number is

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(571)272-1097. The examiner can normally be reached on Monday-Friday 9:00AM to 2:00PM; 4:00PM to 8:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David WU can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/William K Cheung/
Primary Examiner, Art Unit 1796

William K. Cheung, Ph. D.
Primary Examiner
March 2, 2009